

Preaward Compliance Review Report for All Applicants and Recipients Requesting EPA Financial Assistance

Note: Read Instructions before completing form.

I. A. Applicant/Recipient (Name, Address, City, State, Zip Code)

Name: Catherine Hart
Address: 699 Maple Street
City: Elizabeth
State: NJ: New Jersey Zip Code: 07202-2624

B. DUNS No. 4450544724000

II. Is the applicant currently receiving EPA Assistance? ☐ Yes ☒ No

III. List all civil rights lawsuits and administrative complaints pending against the applicant/recipient that allege discrimination based on race, color, national origin, sex, age, or disability. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

NA

IV. List all civil rights lawsuits and administrative complaints decided against the applicant/recipient within the last year that allege discrimination based on race, color, national origin, sex, age, or disability and enclose a copy of all decisions. Please describe all corrective actions taken. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

NA

V. List all civil rights compliance reviews of the applicant/recipient conducted by any agency within the last two years and enclose a copy of the review and any decisions, orders, or agreements based on the review. Please describe any corrective action taken. (40 C.F.R. § 7.80(c)(3))

NA

VI. Is the applicant requesting EPA assistance for new construction? If no, proceed to VII; if yes, answer (a) and/or (b) below.

☐ Yes ☒ No

a. If the grant is for new construction, will all new facilities or alterations to existing facilities be designed and constructed to be readily accessible to and usable by persons with disabilities? If yes, proceed to VII; if no, proceed to VI(b).

☐ Yes ☐ No

b. If the grant is for new construction and the new facilities or alterations to existing facilities will not be readily accessible to and usable by persons with disabilities, explain how a regulatory exception (40 C.F.R. 7.70) applies.

VII. Does the applicant/recipient provide initial and continuing notice that it does not discriminate on the basis of race, color, national origin, sex, age, or disability in its program or activities? (40 C.F.R. 5.140 and 7.95)

☒ Yes ☐ No

a. Do the methods of notice accommodate those with impaired vision or hearing?

☒ Yes ☐ No

b. Is the notice posted in a prominent place in the applicant's offices or facilities or, for education programs and activities, in appropriate periodicals and other written communications?

☒ Yes ☐ No

c. Does the notice identify a designated civil rights coordinator?

☐ Yes ☒ No

VIII. Does the applicant/recipient maintain demographic data on the race, color, national origin, sex, age, or handicap of the population it serves? (40 C.F.R. 7.85(a))

☒ Yes ☐ No

IX. Does the applicant/recipient have a policy/procedure for providing access to services for persons with limited English proficiency? (40 C.F.R. Part 7, E.O. 13166)

☒ Yes ☐ No

- X. If the applicant is an education program or activity, or has 15 or more employees, has it designated an employee to coordinate its compliance with 40 C.F.R. Parts 5 and 7? Provide the name, title, position, mailing address, e-mail address, fax number, and telephone number of the designated coordinator.**

Curtis Myers, Jr., CPA
Director of Finance and Administration
688 Maple Avenue
Elizabeth, NJ 07202-2624
Elizabeth Housing Authority
(p) 908-965-2400 ext 141
(f) 908-965-1925
cmyers@hacenj.com

- XI. If the applicant is an education program or activity, or has 15 or more employees, has it adopted grievance procedures that assure the prompt and fair resolution of complaints that allege a violation of 40 C.F.R. Parts 5 and 7? Provide a legal citation or Internet Address for, or a copy of, the procedures.**

Curtis Myers, Jr., CPA
Director of Finance and Administration
688 Maple Avenue
Elizabeth, NJ 07202-2624
Elizabeth Housing Authority
(p) 908-965-2400 ext 141
(f) 908-965-1925
cmyers@hacenj.com

For the Applicant/Recipient

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law. I assure that I will fully comply with all applicable civil rights statutes and EPA regulations.

A. Signature of Authorized Official

Catherine Hart

B. Title of Authorized Official

Deputy Director

C. Date

03/25/2022

For the U.S. Environmental Protection Agency

I have reviewed the information provided by the applicant/recipient and hereby certify that the applicant/recipient has submitted all preaward compliance information required by 40 C.F.R. Parts 5 and 7; that based on the information submitted, this application satisfies the preaward provisions of 40 C.F.R. Parts 5 and 7; and that the applicant has given assurance that it will fully comply with all applicable civil rights statutes and EPA regulations.

A. *Signature of Authorized EPA Official

B. Title of Authorized Official

C. Date

*** See Instructions**

Instructions for EPA FORM 4700-4 (Rev. 06/2014)

General. Recipients of Federal financial assistance from the U.S. Environmental Protection Agency must comply with the following statutes and regulations.

Title VI of the Civil Rights Acts of 1964 provides that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. The Act goes on to explain that the statute shall not be construed to authorize action with respect to any employment practice of any employer, employment agency, or labor organization (except where the primary objective of the Federal financial assistance is to provide employment). Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act provides that no person in the United States shall on the ground of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under the Federal Water Pollution Control Act, as amended. Employment discrimination on the basis of sex is prohibited in all such programs or activities. Section 504 of the Rehabilitation Act of 1973 provides that no otherwise qualified individual with a disability in the United States shall solely by reason of disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. Employment discrimination on the basis of disability is prohibited in all such programs or activities. The Age Discrimination Act of 1975 provides that no person on the basis of age shall be excluded from participation under any program or activity receiving Federal financial assistance. Employment discrimination is not covered. Age discrimination in employment is prohibited by the Age Discrimination in Employment Act administered by the Equal Employment Opportunity Commission. Title IX of the Education Amendments of 1972 provides that no person in the United States on the basis of sex shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance. Employment discrimination on the basis of sex is prohibited in all such education programs or activities. Note: an education program or activity is not limited to only those conducted by a formal institution. 40 C.F.R. Part 5 implements Title IX of the Education Amendments of 1972. 40 C.F.R. Part 7 implements Title VI of the Civil Rights Act of 1964, Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act, and Section 504 of The Rehabilitation Act of 1973. The Executive Order 13166 (E.O. 13166) entitled; "Improving Access to Services for Persons with Limited English Proficiency" requires Federal agencies work to ensure that recipients of Federal financial assistance provide meaningful access to their LEP applicants and beneficiaries.

Items "Applicant" means any entity that files an application or unsolicited proposal or otherwise requests EPA assistance. 40 C.F.R. §§ 5.105, 7.25. "Recipient" means any entity, other than applicant, which will actually receive EPA assistance. 40 C.F.R. §§ 5.105, 7.25. "Civil rights lawsuits and administrative complaints" means any lawsuit or administrative complaint alleging discrimination on the basis of race, color, national origin, sex, age, or disability pending or decided against the applicant and/or entity which actually benefits from the grant, but excluding employment complaints not covered by 40 C.F.R. Parts 5 and 7. For example, if a city is the named applicant but the grant will actually benefit the Department of Sewage, civil rights lawsuits involving both the city and the Department of Sewage should be listed. "Civil rights compliance review" means any review assessing the applicant's and/or recipient's compliance with laws prohibiting discrimination on the basis of race, color, national origin, sex, age, or disability. Submit this form with the original and required copies of applications, requests for extensions, requests for increase of funds, etc. Updates of information are all that are required after the initial application submission. If any item is not relevant to the project for which assistance is requested, write "NA" for "Not Applicable." In the event applicant is uncertain about how to answer any questions, EPA program officials should be contacted for clarification. * Note: Signature appears in the Approval Section of the EPA Comprehensive Administrative Review For Grants/Cooperative Agreements & Continuation/Supplemental Awards form.

CLINTON J. ANDREWS

Professor of Urban Planning and Policy Development
Edward J. Bloustein School of Planning and Public Policy, Rutgers University

Ex. 6 Personal Privacy (PP)

(a) PROFESSIONAL PREPARATION

Brown University, Providence, RI, Engineering (Urban Technology/Mechanical) w/Honors, BS, 1978
M.I.T., Cambridge, MA, Technology & Policy/Mechanical Engineering, Sigma Xi, MS, 1985
M.I.T., Cambridge, MA, Urban Studies and Planning, PHD, 1990

(b) APPOINTMENTS

2009 - present Professor of Urban Planning, Rutgers, The State University of New Jersey, New Brunswick, NJ
2018 - 2019 Sabbatical Fellow, School of Design, National University of Singapore, Singapore
2009 - 2010 Sabbatical Fellow, Tech Mgmt. & Policy, TU Delft, Delft
2002 - 2009 Associate Professor of Urban Planning, Rutgers, The State University of New Jersey, New Brunswick, NJ
2002 - 2003 Sabbatical Fellow, Science Policy Research Unit, University of Sussex, Brighton
1997 - 2002 Assistant Professor of Urban Planning, Rutgers, The State University of New Jersey, New Brunswick, NJ
1991 - 1997 Assistant Professor of Public Affairs, Princeton University, Princeton, NJ
1990 - 1991 Postdoctoral Associate, Massachusetts Institute of Technology, Cambridge, MA
1979 - 1990 Professional mechanical engineer (licensed PE from 1982), Various: REDE, MCT, Xenergy, Meridian Corp.

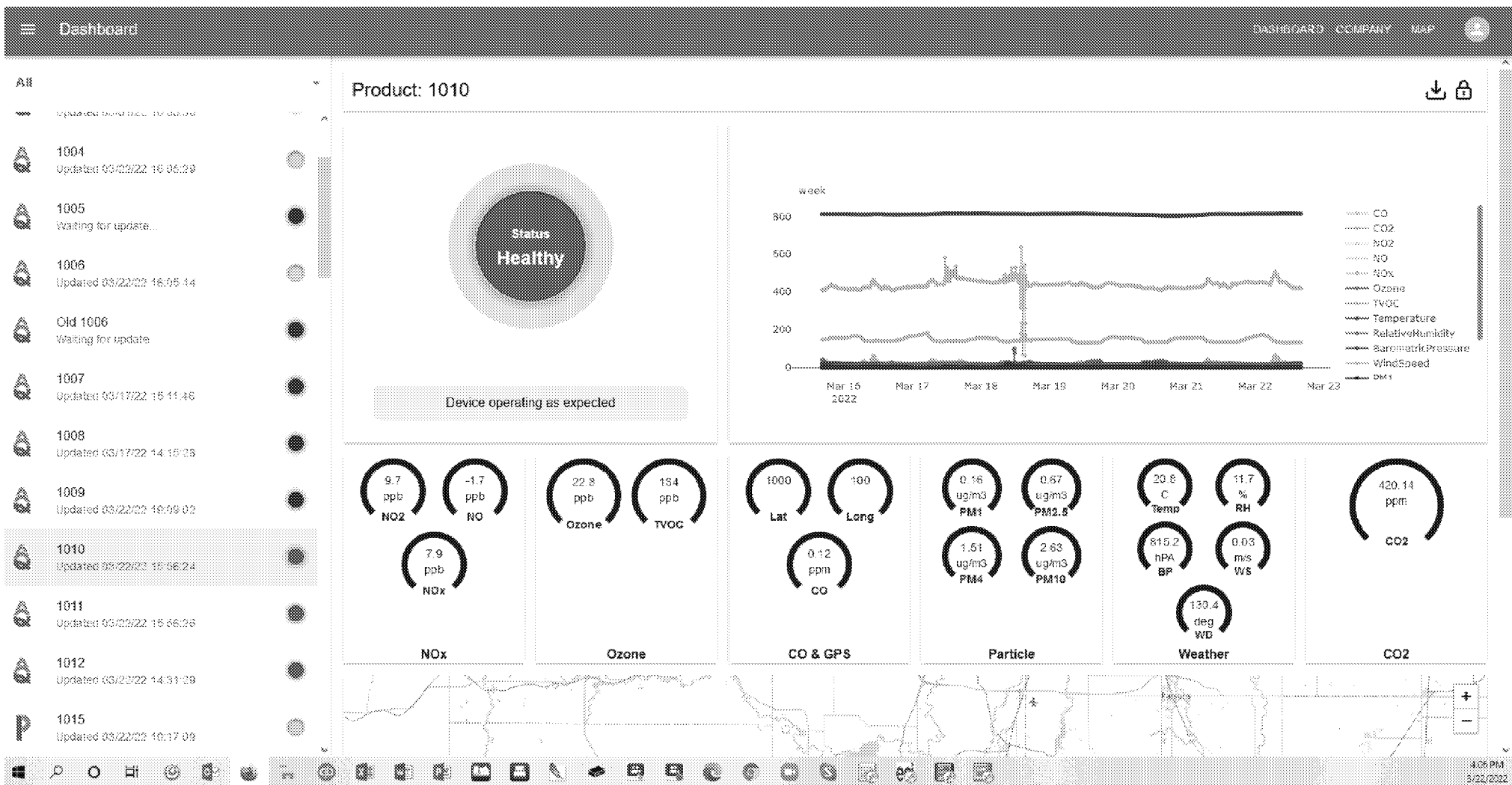
(c) PRODUCTS (recent articles)

Chandra Putra, H., Andrews, C., and Hong, T. (2021): Generating synthetic occupants for use in building performance simulation, *Journal of Building Performance Simulation*, DOI: 10.1080/19401493.2021.2000029
Chandra Putra, H., Hong, T., and Andrews, C. An ontology to represent synthetic building occupant characteristics and behavior. *Automation in Construction*, Volume 125, 2021, 103621, DOI: 10.1016/j.autcon.2021.103621.
Secondo, L., Sagona, J., Calderon, L., Wang, Z., Plotnik, D., Senick, J., Sorensen-Allacci, M., Wener, R., Andrews, C., Mainelis, G. (2021) Estimating lung deposition of fungal spores using actual airborne spore concentrations and physiological data. *Environmental Science & Technology*. DOI: 10.1021/acs.est.0c05540.
He, R., Han, T., Bachman, D., Carluccio, D., Jaeger, R., Zhang, J., Thirumurugesan, S., Andrews, C., Mainelis, G. (2020) Evaluation of two low-cost PM monitors under different laboratory and indoor conditions, *Aerosol Science and Technology*, DOI: 10.1080/02786826.2020.1851649
Myers, N.T., Calderón, L., Pavilonis, B., Wang, Z., Xiong, Y., Sorensen-Allacci, M., Plotnik, D., Senick, J., Gong, J., Krogmann, U., Andrews, C.J. and Mainelis, G. (2020), Presence and variability of culturable bioaerosols in three multi-family apartment buildings with different ventilation systems in the Northeastern US. *Indoor Air* 00:1-22. doi:10.1111/ina.12743

- Tsoulou I, Andrews C, He R, Mainelis G, Senick J. Summertime thermal conditions and senior resident behaviors in public housing: A case study in Elizabeth, NJ, USA. *Building and Environment*. 2020 January; 168:106411-. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S0360132319306213>
DOI:10.1016/j.buildenv.2019.106411
- Stiles, J., and Andrews, C. Powers of Division: “Smart” Spaces as Controlling Workplace Activity Fragmentation. *Annals of the American Association of Geographers*, 110:2, 371-381, DOI: 10.1080/24694452.2019.1672519
- Andrews C. Toward a research agenda on climate-related migration. *Journal of Industrial Ecology*. 2020 April 07; 24(2):331-341. Available from: <https://onlinelibrary.wiley.com/doi/10.1111/jiec.13005>
DOI: 10.1111/jiec.13005
- Chandra-Putra H, Andrews C. An integrated model of real estate market responses to coastal flooding. *Journal of Industrial Ecology*. 2019 November 05; 24(2):424-435. Available from: <https://onlinelibrary.wiley.com/doi/10.1111/jiec.12957> DOI: 10.1111/jiec.12957
- Jordán-Cuebas, F., Krogmann, U., Andrews, C.J., Senick, J.A., Hewitt, E.L., Wener, R.E., Sorensen Allacci, M., Plotnik, D. Understanding Apartment End-Use Water Consumption in Two Green Residential Multistory Buildings, *Journal of Water Resources Planning and Management* 144(4): 04018009-1-20 (2018). DOI: 10.1061/(ASCE)WR.1943-5452.0000911.
- Andrews C, Allacci M, Senick J, Putra H, Tsoulou I. Using synthetic population data for prospective modeling of occupant behavior during design. *Energy and Buildings*. 2016 August; 126:415-423. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S0378778816304182>
DOI:10.1016/j.enbuild.2016.05.049
- Hewitt E, Andrews C, Senick J, Wener R, Krogmann U, Sorensen Allacci M. Distinguishing between green building occupants’ reasoned and unplanned behaviours. *Building Research & Information*. 2015 March 12; 44(2):119-134. Available from: <http://www.tandfonline.com/doi/full/10.1080/09613218.2015.1015854>
DOI:10.1080/09613218.2015.1015854
- Clinton J. Andrews. The changing socioeconomic context of buildings, *Journal of Solar Energy Engineering* (2016) 139(1): 1-10, special issue on buildings of the future, doi: 10.1115/1.4034911.
- Andrews C, Yi D, Krogmann U, Senick J, Wener R. Designing Buildings for Real Occupants: An Agent-Based Approach. *IEEE Transactions on Systems, Man, and Cybernetics - Part A: Systems and Humans*. 2011 November; 41(6):1077-1091. Available from: <http://ieeexplore.ieee.org/document/5740371/>
DOI: 10.1109/TSMCA.2011.2116116

(d) SYNERGISTIC ACTIVITIES

1. Director, Rutgers Center for Green Building, research and policy analysis on how people use the built environment (2006-present)
2. Sub-task Leader, International Energy Agency Annex 66 expert working group on representing human behavior in building performance simulation models (2013-2018). Now participating in related Annex 79 (2018-2023).
3. Member, Science Advisory Board, N.J. Dept. of Environmental Protection (2010-2023). Studies of coastal hazards, citizen science, contaminants of emerging concern, others.
4. Member, Foresight Group on AI, American Planning Association, 2022-2022.
5. Professional Recognition, made Fellow of American Association for the Advancement of Science (2016) for “using simulation modeling to enhance public discourse on social implications of technological change.”





EPA KEY CONTACTS FORM

OMB Number: 2030-0020
Expiration Date: 06/30/2024

Authorized Representative: *Original awards and amendments will be sent to this individual for review and acceptance, unless otherwise indicated.*

Name:	Prefix:	<input type="text"/>	First Name:	<input type="text" value="Catherine"/>	Middle Name:	<input type="text"/>
	Last Name:	<input type="text" value="Hart"/>			Suffix:	<input type="text"/>
Title:	<input type="text" value="Deputy Director"/>					
Complete Address:						
Street1:	<input type="text" value="688 Maple Avenue"/>					
Street2:	<input type="text"/>					
City:	<input type="text" value="Elizabeth"/>	State:	<input type="text" value="NJ: New Jersey"/>			
Zip / Postal Code:	<input type="text" value="07202-2426"/>	Country:	<input type="text" value="USA: UNITED STATES"/>			
Phone Number:	<input type="text" value="(908) 965-2400,"/>			Fax Number:	<input type="text"/>	
E-mail Address:	<input type="text" value="chart@hacenj.org"/>					

Payee: *Individual authorized to accept payments.*

Name:	Prefix:	<input type="text"/>	First Name:	<input type="text" value="Catherine"/>	Middle Name:	<input type="text"/>
	Last Name:	<input type="text" value="Hart"/>			Suffix:	<input type="text"/>
Title:	<input type="text" value="Deputy Director"/>					
Complete Address:						
Street1:	<input type="text" value="688 Maple Avenue"/>					
Street2:	<input type="text"/>					
City:	<input type="text" value="Elizabeth"/>	State:	<input type="text" value="NJ: New Jersey"/>			
Zip / Postal Code:	<input type="text" value="07202-2624"/>	Country:	<input type="text" value="USA: UNITED STATES"/>			
Phone Number:	<input type="text" value="(908) 965-2400,"/>			Fax Number:	<input type="text"/>	
E-mail Address:	<input type="text" value="chart@hacenj.org"/>					

Administrative Contact: *Individual from Sponsored Programs Office to contact concerning administrative matters (i.e., indirect cost rate computation, rebudgeting requests etc).*

Name:	Prefix:	<input type="text"/>	First Name:	<input type="text" value="Catherine"/>	Middle Name:	<input type="text"/>
	Last Name:	<input type="text" value="Hart"/>			Suffix:	<input type="text"/>
Title:	<input type="text" value="Deputy Director"/>					
Complete Address:						
Street1:	<input type="text" value="688 Maple Svenue"/>					
Street2:	<input type="text"/>					
City:	<input type="text" value="Elizabeth"/>	State:	<input type="text" value="NJ: New Jersey"/>			
Zip / Postal Code:	<input type="text" value="07202-2624"/>	Country:	<input type="text" value="USA: UNITED STATES"/>			
Phone Number:	<input type="text" value="(908) 965-2400,"/>			Fax Number:	<input type="text"/>	
E-mail Address:	<input type="text" value="chart@hacenj.org"/>					

EPA KEY CONTACTS FORM

Project Manager: *Individual responsible for the technical completion of the proposed work.*

Name: **Prefix:** **First Name:** **Middle Name:**

Last Name: **Suffix:**

Title:

Complete Address:

Street1:

Street2:

City:

State:

Zip / Postal Code:

Country:

Phone Number:

Fax Number:

E-mail Address:

Other Attachment File(s)

* Mandatory Other Attachment Filename:

1234-LOS.HACE.EPA.AmbientAirQuality .pdf

Add Mandatory Other Attachment

Delete Mandatory Other Attachment

View Mandatory Other Attachment

To add more "Other Attachment" attachments, please use the attachment buttons below.

Add Optional Other Attachment

Delete Optional Other Attachment

View Optional Other Attachment

Project Narrative File(s)

* **Mandatory Project Narrative File Filename:**

Add Mandatory Project Narrative File

Delete Mandatory Project Narrative File

View Mandatory Project Narrative File

To add more Project Narrative File attachments, please use the attachment buttons below.

Add Optional Project Narrative File

Delete Optional Project Narrative File

View Optional Project Narrative File

BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006
Expiration Date: 02/28/2022

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. EPA-OAR-OAQPS-2	0	\$ 500,000.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 500,000.00
2. N/A	0	0.00	0.00	0.00	0.00	0.00
3. N/A	0	0.00	0.00	0.00	0.00	0.00
4. N/A	0	0.00	0.00	0.00	0.00	0.00
5. Totals		\$ 500,000.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 500,000.00

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SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
	EPA-OAR-OAQPS-2	N/A	N/A	N/A	
a. Personnel	\$ 98,300.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 98,300.00
b. Fringe Benefits	0.00	2,700.00	0.00	0.00	2,700.00
c. Travel	0.00	0.00	0.00	0.00	0.00
d. Equipment	0.00	0.00	136,000.00	0.00	136,000.00
e. Supplies	0.00	0.00	9,468.00	0.00	9,468.00
f. Contractual	0.00	0.00	253,532.00	0.00	253,532.00
g. Construction	0.00	0.00	0.00	0.00	0.00
h. Other	0.00	0.00	0.00	0.00	0.00
i. Total Direct Charges (sum of 6a-6h)	98,300.00	2,700.00	399,000.00	0.00	\$ 500,000.00
j. Indirect Charges	0.00	0.00	0.00	0.00	\$ 0.00
k. TOTALS (sum of 6i and 6j)	\$ 98,300.00	\$ 2,700.00	\$ 399,000.00	\$ 0.00	\$ 500,000.00
7. Program Income	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00

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SECTION C - NON-FEDERAL RESOURCES					
(a) Grant Program		(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8.	EPA-OAR-OAQPS-2	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
9.	N/A	2,700.00	0.00	0.00	2,700.00
10.	N/A	0.00	0.00	0.00	0.00
11.	N/A	0.00	0.00	0.00	0.00
12. TOTAL (sum of lines 8-11)		\$ 2,700.00	\$ 0.00	\$ 0.00	\$ 2,700.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ 280,000.00	\$ 35,000.00	\$ 175,000.00	\$ 35,000.00	\$ 35,000.00
14. Non-Federal	\$ 0.00	0.00	0.00	0.00	0.00
15. TOTAL (sum of lines 13 and 14)	\$ 280,000.00	\$ 35,000.00	\$ 175,000.00	\$ 35,000.00	\$ 35,000.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program		FUTURE FUNDING PERIODS (YEARS)			
		(b)First	(c) Second	(d) Third	(e) Fourth
16.	EPA-OAR-OAQPS-2	\$ 45,000.00	\$ 23,000.00	\$ 28,000.00	\$ 0.00
17.	N/A	0.00	0.00	2,700.00	0.00
18.	N/A	141,000.00	9,000.00	0.00	0.00
19.	N/A	94,000.00	127,300.00	130,000.00	0.00
20. TOTAL (sum of lines 16 - 19)		\$ 280,000.00	\$ 159,300.00	\$ 160,700.00	\$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges:	22. Indirect Charges: HACE declines the Indirect Charge
23. Remarks:	

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Application for Federal Assistance SF-424

*** 1. Type of Submission:**

- ☐ Preapplication
☒ Application
☐ Changed/Corrected Application

*** 2. Type of Application:**

- ☒ New
☐ Continuation
☐ Revision

*** If Revision, select appropriate letter(s):**

*** Other (Specify):**

*** 3. Date Received:**

03/25/2022

4. Applicant Identifier:

Housing Authority of the City

5a. Federal Entity Identifier:

44505447240000

5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

*** a. Legal Name:** Housing Authority of the City of Elizabeth

*** b. Employer/Taxpayer Identification Number (EIN/TIN):**

22-6001781

*** c. Organizational DUNS:**

0440547240000

d. Address:

*** Street1:** 688 Maple Avenue

Street2:

*** City:** Elizabeth

County/Parish: Union

*** State:** NJ: New Jersey

Province:

*** Country:** USA: UNITED STATES

*** Zip / Postal Code:** 07202-2624

e. Organizational Unit:

Department Name:

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix: *** First Name:** Catherine

Middle Name:

*** Last Name:** Hart

Suffix:

Title: Deputy Director

Organizational Affiliation:

Housing Authority of the City of Elizabeth

*** Telephone Number:** (908) 965-2400

Fax Number:

*** Email:** chart@hacenj.com

Application for Federal Assistance SF-424

* 9. Type of Applicant 1: Select Applicant Type:

L: Public/Indian Housing Authority

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

* 10. Name of Federal Agency:

Environmental Protection Agency

11. Catalog of Federal Domestic Assistance Number:

66.034

CFDA Title:

Surveys, Studies, Research, Investigations, Demonstrations, and Special Purpose Activities
Relating to the Clean Air Act

* 12. Funding Opportunity Number:

EPA-OAR-OAQPS-22-01

* Title:

Enhanced Air Quality Monitoring for Communities

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

1243-HACE.EPA.ProjectLocations.pdf

Add Attachment

Delete Attachment

View Attachment

* 15. Descriptive Title of Applicant's Project:

Project Title: Addressing Ambient Air Pollution at the Housing Authority City of Elizabeth. An
Urban Housing Authority Demonstration Project.

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

Application for Federal Assistance SF-424**16. Congressional Districts Of:*** a. Applicant * b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

17. Proposed Project:* a. Start Date: * b. End Date: **18. Estimated Funding (\$):**

* a. Federal	<input type="text" value="500,000.00"/>
* b. Applicant	<input type="text" value="0.00"/>
* c. State	<input type="text" value="0.00"/>
* d. Local	<input type="text" value="0.00"/>
* e. Other	<input type="text" value="0.00"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="500,000.00"/>

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

- ☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .
- ☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- ☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment

Delete Attachment

View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name:

Middle Name:

* Last Name:

Suffix:

* Title: * Telephone Number: Fax Number: * Email: * Signature of Authorized Representative: * Date Signed:



GROUNDWORK
Elizabeth

President

Gregory Waga, R.A.
Waga Enterprises--Architects

Vice President

John Gallina
Private Developer

Treasurer

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Rotary Club of Elizabeth

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Township of Union

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Elizabeth Avenue Partnership

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Immediate Past President

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LaCorte, Bundy, Varady, Kinsella

Advisors & Advisory Board

Janice de Avila
Historic Midtown SID

Victor Vinegra
Harbor Consultants

Karen Grant
NJ Fire Safety Training Program

Groundwork Elizabeth's mission is "to bring about the sustained regeneration, improvement and management of the physical environment by developing community-based partnerships which empower people, businesses and organizations to promote environmental, economic and social well-being".

Attn: Catherine Hart
Deputy Director
Housing Authority of the City of Elizabeth (HACE)

March 17, 2022

RE: Groundwork Elizabeth support for a HACE application for a United States Environmental Protection Agency Grant for Enhanced Air Quality Monitoring for Communities: EPA-OAR-OAQPS-22-01

Dear Cathy,

I am writing this letter to today to confirm Groundwork Elizabeth's full support for HACE's application to the USEPA for opportunity: EPA-OAR-OAQPS-22-01

Groundwork's key organizational goal is to build more sustainable communities. With this as a foundation for our programming we have been engaged in structuring and supporting a "Climate Safe Elizabeth" initiative. Most recently, in 2022, we were the recipients of an EPA Environmental Justice small grant to conduct the Elizabeth Clean Air Project

For the EPA initiative EPA-OAR-OAQPS-22-01, Groundwork will build upon our work within the HACE community with members of the HACE HEAT (HACE Environmental Adventure Team) and HACE residents. Groundwork will lead the installation of monitoring equipment, facilitate community activities and transition the project oversight to a newly created position at HACE- Environmental Justice Coordinator.

Please know that you can count on Groundwork staff to provide any assistance to make this program a success. We are looking forward to getting started. Please feel free to reach out with any questions.

Sincerely,

Jonathan Phillips, Executive Director, Groundwork Elizabeth

phone (908) 289-0262, extension 203 – fax (908) 558-1142

Street Address--205 First Street, Elizabeth, N.J. 07206 – Mailing Address-P.O. Box 512 – Elizabeth, New Jersey 07207-0512

email: elizabethnj@groundworkusa.org, jonathan@groundworkelizabeth.org

www.groundworkelizabeth.org

Jonathan Phillips, Executive Director

Groundwork is a 501c3 non-profit organization

JACKIE PARK ALBAUM

My Objective: *To advance systems changes that support universal access to healthy food, nourishing community life, and vibrant urban spaces in New Jersey by leveraging my skills and experience with big-picture vision development, resource cultivation, exemplary program and project management, and forging generative relationships with a wide range of stakeholders.*

PROFESSIONAL HISTORY

Director of Urban Agriculture and Environmental Justice, Groundwork Elizabeth

October 2010 ~ Present - Elizabeth, New Jersey - www.groundworkelizabeth.org

Created the Groundwork Elizabeth's Come Grow With Us! Community Gardening Initiative to increase access to sustainably grown foods and provide accompanying education in order to build sustainable and equitable communities. Come Grow With Us! has widespread community support and a good administrative foundation. Today, the initiative provides financial, technical and practical assistance to establish verdant, food producing partner gardens and farms at schools, nonprofits, in partnership with government and the private sector.

PROGRAM MANAGEMENT:

- Visioned and developed the Come Grow With Us! Urban Agriculture Initiative with a staff of four and 150+ volunteers to run five garden sites serving 11,000+ residents (Groundwork Elizabeth MicroFarm, Elmora Community Garden, Vira Verde Hydroponic Greenhouse, E'Port Community Center Garden and Bayway Community Garden at the Elizabeth Housing Authority).
- Raise \$185k Manage all program, grant and Fee-For-Service budgets Raise \$185K annual budget through grants, corporate and individual donors, and fee-for-service projects.
- Maintain relationships with 140+ community gardens across Union County, including the City of Elizabeth (3 gardens), Housing Authority of the City of Elizabeth (6 gardens), Elizabeth Board of Education (40 gardens).

RESOURCE DEVELOPMENT:

- Raised a total of \$1m+ from local, state and federal governments, foundations, corporate sponsorships, Fee-For-Service projects and special events to support gardening programs, including \$300k Fee-For-Service multi-year contract with the Union County Board of Commissioners to administer two community agriculture grant programs, a \$250k award from the NJDEP for MORE P.E.A.S. (Permaculture in Agricultural Systems, the development of a MicroFarm,) \$75k from the Natural Resource Conservation Services NJ Conservation Innovation Grant (to develop an urban farm conservation showcase), \$75k Housing Authority City of Elizabeth and \$20k from Sustainable Jersey (green infrastructure demonstration areas at MicroFarm.)
- Responsible for all fundraising for program work, including resource development strategy, prospect identification, grant writing, reporting, donor cultivation and relationship maintenance, sponsorship management/solicitation, and support for organization-wide fundraising efforts.

Position Highlights:

- Creation of the first hydronic greenhouse in Elizabeth,
- Creation of Jerry's Greenhouse, the first educational greenhouse in Elizabeth,
- Creation of the MicroFarm concept and development of the first MicroFarm in Elizabeth in partnership with the New Jersey Department of Environmental Protection.
- Launched two community gardens, free and open to the public
- Established food producing gardens in all public schools (40 as of January 2020)
- Established food producing gardens at all Housing Authority of the City of Elizabeth locations
- Established and/or expanded gardens at three Senior Centers in the City of Elizabeth
- Establishment of the Climate Safe Elizabeth Task Force

FARMING:

- Develop Maintenance Crop Plans for Groundwork Elizabeth Sites and partner gardens, including managing production/distribution of 15,000 seedlings annually to partner garden sites.

- Oversee Groundwork Elizabeth produce production/distribution/sales, from cultivation to harvest to market.
- Manage events that support farm operations,

Director of Brand Management & Community Engagement, United Way of Passaic County

October 2010 ~ May 2014 - Paterson, New Jersey - www.unitedwaypassaic.org

- DONOR ENGAGEMENT: Donor Research, Management, Engagement, Solicitation, Reporting.
- BRAND MANAGEMENT: Identity development, Design, Technology, Advertising, Marketing, Special Event Fundraisers and Friendraisers (12+ per year)
- COMMUNICATIONS: Public Relations/Information Dissemination, Printed Materials, Digital Communications
- COMMUNITY ENGAGEMENT: Corporate/Group/Individual Volunteers

Director of Brand Management & Community Engagement, United Way of Greater Union County

October 2006 ~ May 2010 - Elizabeth, New Jersey - www.uwguc.org

- BRAND MANAGEMENT Identity Development, Design, Technology, Advertising, Marketing, Special Event Fundraisers and Friendraisers (12+ per year)
- COMMUNICATIONS: Public Relations/Information Dissemination, Printed Materials, Digital Communications
- COMMUNITY ENGAGEMENT: Corporate/Group/Individual Volunteers, Community Councils, Affinity Groups
- CREATIVE STUDIO: Perform above services for United Way of Passaic County, United Way of Monmouth County, and United Way of Warren County.

Communications Coordinator, The Visual Arts Center of New Jersey

October 2002 ~ October 2006 - Summit, New Jersey - www.artcenternj.org

Public Relations Assistant, The Newark Museum

July 2001 ~ October 2002 - Newark, New Jersey - www.newarkmuseum.org

Assistant to CEO, IMC – Istros Media Corporation

March 1999 ~ June 2001 - New York, New York - www.istros.com

Account Executive, Jeff McKay Public Relations

March 1997 ~ March 1999 - New York, New York

Education_

Kean University, BA Earth Science, Minor Environmental Justice

Penn State, Exploring the Small Farm Dream, Certificate Course 2016

Geraldine R. Dodge Foundation, Red Bank, New Jersey - New York University Continuing Education 2006

Fashion Institute of Technology, New York: Associate in Applied Science, Fashion Merchandising Management, 2002, Coursework completed

Gediminas “Gedi” Mainelis, Ph.D., Professor

Department of Environmental Sciences, Rutgers, The State University of New Jersey

Ph: 848-932-5712; Email: mainelis@rutgers.edu

Relevant Experience

I have over 20 years of experience researching various health and exposure-related aspects of air pollution, especially airborne particles and bioaerosol, including indoor air quality investigations. My research efforts have resulted in more than 110 peer-reviewed articles and book chapters, and several granted patents. I have been supported by a K01 award (CDC/NIOSH), a Twining program fellowship from the National Academy of Sciences, and various research grants from NIEHS, NSF, CDC/NIOSH, HUD, NCI, NHLBI, and private industry. I believe I have sufficient experience and expertise to be a productive and innovative member of this project.

Education

Salzburg University, Austria, Dept. of Biophysics	Biophysics		1992-93
Vilnius University, Lithuania, Dept. of Physics	Physics	B.S.	1994
University of Cincinnati, Dept. of Environ. Health	Environ. Health	Ph.D.	2000
University of Cincinnati,	Aerosols	Post.Doc	2000-01

Professional Experience

Assistant Professor, Dept. of Environ. Sciences, Rutgers University, NJ	2001-2007
Associate Prof. with tenure, Dept. of Environ. Sciences, Rutgers University, NJ	2007-2014
Professor with tenure, Dept. of Environ. Sciences, Rutgers University, NJ	2014-

Recent Professional Activities

Co-Organizer (with P. Dabish and S. Ratnesar-Shumate), “Infectious Aerosols in the Age of COVID-19”, a special symposium at the annual conference of the American Association for Aerosol Research (AAAR) 2021.

Chair, “Bioaerosols Working Group” of AAAR, 2020-2021

Editor, *Aerosol and Air Quality Research*, 2012 - present

Member, Editorial Advisory Board, *Aerosol Science and Technology*, 2011- 2019

Patents

“Particulate Air Sampling using Ferroelectric Materials,” US Patent 11,169,055.

“Personal Electrostatic Bioaerosol Sampler (PEBS) with High Sampling Flow rate,” US Patent 10,919,047.

“Electrostatic Screen Battery for Emission Control (ESBEC),” US Patent 8,721,767B2

“Method and Device for the Collection of Airborne Particles and their Concentration in Small Amounts of Liquid,” US Patent No. 8,186,235.

Honors

Lyman A. Ripperton Environmental Educator Award (2016); Research Excellence Award, Rutgers University (2008); CDC/NIOSH Special Emphasis Research Career Award (2008)

Selected Invited presentations (selected entries out of 75+)

“From the Lungs to Aerosol to Human Contact – a Journey of SARS-CoV-2 Viral Particle”,

Inaugural Symposium of the NIEHS Disaster Research Response Committee Symposium:
 Session 1: Routes of Transmission and Exposure Mitigation (Online, 01/13/2021).
 “Bioaerosol Sampling: from Classical Approaches to Current Advances,”
Keynote presentation, 10th National China Conference on Environmental Chemistry
 (Nankai University in Tianjin, China, August 15-19th, 2019).
 “Bioaerosol Encounters: From Exposure Assessment to Environmental Impacts,”
Plenary lecture at the 10th Asian Aerosol Conference (Jeju, Republic of Korea, July 2-6,
 2017).

Current Research Projects

VA NJ Health Care System “Analysis of methacholine aerosol delivery for respiratory
 procedures,” PI: G. Mainelis
 NJ DEP, “Cleaning the Indoor Air We Breathe: Evaluation of Low-Cost ‘Do It Yourself ‘Air
 Cleaners in the Age of COVID-19,” PI: G. Mainelis.
 Atlantic Health System Hospital Corp./Morristown Medical Center, “Characterizing Potential
 Exposure to Airborne SARS-CoV-2 Virus Particles in Hospital Rooms of COVID-19
 Patients, PIs: G. Mainelis, L. Robinson, R. Laumbach.
 VWR International, “Evaluation of SAS family bioaerosol samplers,” PI: G. Mainelis
 NIEHS, 1T32ES019854, “Training Grant in Exposure Science,” PIs: C. Weisel (Contact), G.
 Mainelis.
 NIH/NCI 1R01CA238871, “Bionanotechnology Approach for Treatment of Lung Cancer,” PI:
 T. Minko and Co-I: G. Mainelis.

Refereed Publications (selected publications, selected out of more than 110 publications)

Laumbach, R., Mainelis, G., Black, K., Myers, N.T., Ohman-Strickland, P., Alimokhtari, S.,
 Hastings, S., Resende, A.D., Legard, A., Calderón, L., Lu, F., and Kipen, H.* (2021)
 Presence of SARS-CoV-2 in residences of adults with COVID-19, *Annals of the American
 Thoracic Society*, 19(2): 338. *Note: Laumbach, Mainelis, and Black share the authorship.*
 Tsoulou, I., Senick, J., Mainelis, G., Kim, S.-Y. (2021) Residential Indoor Air Quality
 Interventions through a Social-Ecological Systems Lens: A Systematic Review, *Indoor Air*,
 31(4): 958-976.
 He, R., Bachman, D., Carluccio D.J., Jaeger, R., Zhang, J., Thirumurugesan, S., Andrews, C.,
Mainelis, G. (2020) Evaluation of Two Low-cost Sensors under Different Laboratory and
 Indoor Conditions, *Aerosol Science and Technology*, 55(3): 316-331.
 Manibusan, S. and Mainelis, G. (2020) Performance of Four Consumer-Grade Air Pollution
 Measurement Devices in Different Residences, *AAQR*, 20: 217–230.
 Tsoulou, I., Andrews, C., He, R., Mainelis, G., and Senick, J. (2020) Summertime Thermal
 Conditions and Senior Resident Behaviors in Public Housing, *Building and Environment*,
 168: 106411.
 Thomas, N., Calderón, L., Senick, J., Sorensen–Allacci, M., Plotnik, D., Guo, M., Gong, J.,
 Clint, A. and Mainelis, G. (2019) Application of Three Different Data Streams to Study
 Building Deficiencies, Indoor Air Quality, and Residents’ Health, *Building and Environment*,
 154: 281-295.
 Kim, S., Senick, J., and Mainelis, G. (2019) Sensing the Invisible: the Perception of Indoor Air
 Quality among Low-Income Families, *International Journal of Child-Computer Interaction*,
 19:79-88.

Manifest for Grant Application # GRANT13580539

Grant Application XML file (total 1):

1. GrantApplication.xml. (size 36554 bytes)

Forms Included in Zip File(total 6):

1. Form ProjectNarrativeAttachments_1_2-V1.2.pdf (size 16137 bytes)

2. Form SF424_3_0-V3.0.pdf (size 24158 bytes)

3. Form SF424A-V1.0.pdf (size 23716 bytes)

4. Form EPA4700_4_3_0-V3.0.pdf (size 22755 bytes)

5. Form OtherNarrativeAttachments_1_2-V1.2.pdf (size 15912 bytes)

6. Form EPA_KeyContacts_2_0-V2.0.pdf (size 37180 bytes)

Attachments Included in Zip File (total 10):

1. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1241-JackieParkAlbaumResume-2021.docx.pdf application/pdf (size 77237 bytes)

2. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1240-HACE.Locations.ElizabethNJ.v6.pdf application/pdf (size 4545979 bytes)

3. SF424_3_0 SF424_3_0-1243-HACE.EPA.ProjectLocations.pdf application/pdf (size 60134 bytes)

4. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1239-AQLite.Dashboard.PNG image/png (size 330940 bytes)

5. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1238-Senick 2-page EPA-03-21-22.pdf application/pdf (size 571361 bytes)

6. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1237-Mainelis-2-page-EPA-03-21-22.pdf application/pdf (size 220704 bytes)

7. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1236-Andrews-2-page-EPA-03-21-22.pdf application/pdf (size 556616 bytes)

8. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1235-GWE.HACE.EPA.LOS.M26.DRAFT.docx.pdf application/pdf (size 200722 bytes)

9. ProjectNarrativeAttachments_1_2 ProjectNarrativeAttachments_1_2-Attachments-1242-EPA.GRANT.HACE.AmbientAirQuality.pdf application/pdf (size 775158 bytes)

10. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1234-LOS.HACE.EPA.AmbientAirQuality .pdf application/pdf (size 956104 bytes)

Location Name	Units		Address	City	State	Zip	Census Tract: 304 (7 locations), 319.04 (2 locations), 311, 306, 398.01
F & B Gardens	10	10	132 1st Street	Elizabeth	New Jersey	7206	304
Farley Towers	249	249	33 Cherry Street	Elizabeth	New Jersey	7202	319.04
Ford-Leonard Towers	121	121	69 Division Street	Elizabeth	New Jersey	7206	311
Kennedy Arms	125	125	70 Westfield Avenue	Elizabeth	New Jersey	7208	319.04
Marina Village	35	35	147 1st Street	Elizabeth	New Jersey	7206	304
Mravlag Manor	423	423	688 Maple Avenue	Elizabeth	New Jersey	7202	306
O'Donnell-Dempsey Towers	100	100	632 Salem Avenue	Elizabeth	New Jersey	7208	317
205 1st Street	31	31	205 1st Street	Elizabeth	New Jersey	7206	304
E'Port Family Homes	60	60	160 1st Street/200 Third Street	Elizabeth	New Jersey	7206	304
Heritage Village	87	87	225 second Street	Elizabeth	New Jersey	7206	304
Portside Commons 1	180	180	255 3rd Street	Elizabeth	New Jersey	7206	398.01
Portside Commons 2	136	136	136 Pine Street	Elizabeth	New Jersey	7206	304
Waters Edge	47	47	80 Magnolia Ave	Elizabeth	New Jersey	7206	304
Section 8	1500 vouchers	1604	Various	Elizabeth	New Jersey	Various	Various

JENNIFER A. SENICK

Rutgers Center for Green Building
Edward J. Bloustein School of Planning and Public Policy, Rutgers, The State University
Ph. 848-932-2904; Email: jsenick@rutgers.edu

Relevant Experience

I have over 20 years' experience as an urban planner and public policy practitioner with deep knowledge of green building policy and practice, and substantial and varied experiences in research project management. I have led or contributed to dozens of studies and publications on applied healthy housing topics including those focused on air quality and community-based interventions and am active in the development and conduct of K-12 STEM/maker initiatives in disadvantaged communities.

Education

Bowdoin College, Brunswick, ME, Government/Russian, A.B., (Honors) 1991
University of California, Los Angeles, Political Science, M.A., 1994
Rutgers, The State University of New Jersey, Urban Planning and Public Policy, Ph.D., 2015.

Professional Experience

Rutgers University: Edward J. Bloustein School of Planning and Public Policy, Executive Director, Rutgers Center for Green Building, 2006-present; Director of Development (2016-2021); Sustainability Consultant, Office of Research and Economic Development, 2015-2016. Lecturer – Urban Economics, Environmental Planning, Environmental Life Cycle Assessment (2006-present); Rutgers Energy Institute (2012-present). Rutgers Sustainability Committee, (2015-present).
Other Employment: Ron Rukenstein & Associates, LLC, Associate Urban Planner (2002-2005); Telcordia Technologies (Bellcore), Executive Director, Global Customer Solutions; Pan Atlantic SMS Group, Senior Management Consultant, (1997-2001); Rand Corporation, Research Associate (1991-1997).

Boards and Expert Working Groups

Trustee, Children's Specialized Hospital, Nov 2020-present; Environmental Design Research Association (EDRA), Co-chair, EDRA Sustainability Knowledge Network, 2010-present, Board of Directors, 2014-2017; American Planning Association, International Division, Coordinator of International Health Planning and Impact Assessment Initiatives, 2015-present; NJ Chapter Executive Committee, 2017-2020; NJ Planning Healthy Communities Initiative, 2014-present; NJ Climate Adaptation Alliance, 2013-present

Patents

Rutgers Docket # 2016-102; NOI -SPIRIT (Spatially Resolved Infrared Thermography)

Research Grants

2017-2022	NJ Board of Public Utilities, Clean Energy Evaluation and Market Assessment Professional Services
2019-2021	Community Design for Health and Wellness Rutgers University Interdisciplinary Research Award, Designing for Engagement in IAQ in Low-Income Households
2017-2022	Valley National Bank, Community-based Air Quality and Health Interventions in LMI Multifamily, Elizabeth, NJ
2018-2019	NJ Department of Community Affairs, Green, Resilient and Prosperous NJ: Updated Tools and Guidelines for Buildings & Land Use

2016-2018	NSF EAGER, Predicting Electricity Demand and Indoor Air Quality during Heat Waves
2015-2016	American Planning Association, U.S. CDC (sub award with NJ APA), Advancing Health in All Policies in the Capitol City (Trenton, NJ)
2013-2016	U.S. Department of Housing and Urban Development, Cost-Effective Detection of Multi-Family Housing-Related Health and Safety Hazards
2010-2012	U.S. Department of Housing and Urban Development, Expanding the Definition of Green: Impacts of Green and Active Living Design on Health in Low Income Housing

Refereed Publications - View more publications on https://soar.libraries.rutgers.edu/bib/Jennifer_Senick

1. Tsoulou, I., Senick, J., Kim, S., Mainelis, G. (2021). Residential Indoor Air Quality Interventions through a Social-Ecological Systems Lens: A Systematic Review. *Indoor Air*. Published Online. <http://doi.org/10.1111/ina.12835>
2. Secondo, L., Sagona, J., Calderon, L., Wang, Z., Plotnik, D., Senick, J., Sorensen-Allacci, MA; Wener, R., Andrews, C., Mainelis, G. (2021). Estimating lung deposition of fungal spores using actual airborne spore concentrations and physiological data. *Environmental Science & Technology*. <https://dx.doi.org/10.1021/acs.est.0c05540>
3. Thomas, N., Calderón, L., Pavilonis, B., Wang, Z., Xiong, Y., Sorensen-Allacci, MA, Plotnik, D., Senick, J., Gong, J., Krogmann, U., Andrews, C., Mainelis, G. (2020). Presence and variability of culturable bioaerosols in three multi-family apartment buildings with different ventilation systems in the Northeastern US. *Indoor Air*, Volume 30, Issue 5, September. [doi:10.1111/ina.12743](https://doi.org/10.1111/ina.12743)
4. Kim, S., Li, M., Senick, J., Mainelis, G. (2020). Designing to Engage Children in Monitoring Indoor Air Quality: A Participatory Approach. In *Proceedings of the Interaction Design and Children Conference*, pp. 323-334, 2020. <https://dl.acm.org/doi/10.1145/3392063.3394395>
5. Tsoulou, I., Andrews, C., He, R., Mainelis, G. & Senick, J. (2020). Summertime Thermal Conditions and Senior Resident Behaviors in Public Housing: A Case Study in Elizabeth, NJ, USA. *Building and Environment*, 168, 106411. <https://doi.org/10.1016/j.buildenv.2019.106411>
6. Thomas et al. (2019). Investigation of Indoor Air Quality Determinants in a Field Study using Three Different Data Streams. *Building & Environment* 154, 281–295. <https://doi.org/10.1016/j.buildenv.2019.03.022>
7. Kim, S., Senick, J., Mainelis, G. (2018). Sensing the Invisible: Understanding the Perception of Indoor Air Quality Among Children in Low-Income Families. *International Journal of Child-Computer Interaction*. IJCCI122. <https://doi.org/10.1016/j.ijcci.2018.12.002>
8. Senick, J., Carnegie J., Latini, C. (2018) "Planning for Healthy Communities", *NJ Handbook of Planning*, Fourth Edition.
9. Wang, Z., Calderón, L., Patton, A., Sorensen-Allacci, MA, Senick, J., Wener, R., Andrews, C., Mainelis, G. (2016). Comparison of Real-time Instruments and Gravimetric Method when Measuring Particulate Matter in a Residential Building. *Journal of the Air & Waste Management Association*, 66 (11) 1109-1120. <https://doi.org/10.1080/10962247.2016.1201022>
10. Patton, A., Calderon, L., Xiong, Y., Wang, Z., Senick, J., Sorensen Allacci, MA., Plotnik, D., Wener, R., Andrews, C., Krogmann, U., Mainelis, G. (2016). Airborne Particulate Matter in Two Multi-Family Green Buildings: Concentrations and Effect of Ventilation and Occupant Behavior. *International Journal of Environmental Research and Public Health*, 13, 144 <https://doi.org/10.3390/ijerph13010144>
11. Mainelis, G., Xiong, Y., Wang, Z., Krogmann, U., Andrews, C., Wener, R., Senick, J. (2011). Investigation of bioaerosols and other indoor air quality parameters in two green residential buildings in the northeastern US. *American Association for Aerosol Research*, Orlando, Florida, USA. <http://aaarabstracts.com/2011/>



Office Of The Mayor

CITY OF ELIZABETH, NEW JERSEY

J. CHRISTIAN BOLLWAGE
Mayor

CITY HALL
50 WINFIELD SCOTT PLAZA
ELIZABETH, NEW JERSEY 07201-2462

TEL. 908-820-4170
FAX 908-820-0130

March 22, 2022

Ms. Catherine Hart
Deputy Executive Director
Housing Authority of the City of Elizabeth
688 Maple Avenue
Elizabeth, NJ 07202

Dear Ms. Hart:

The City of Elizabeth is pleased to support the Housing Authority of the City of Elizabeth's Ambient Air Monitoring Grant application, being submitted to the Environmental Protection Agency. This opportunity supports our municipality's *Go Green* initiatives and seeks to improve the quality of life throughout our municipality.

Through investigative efforts and analysis, this grant will enable air quality within our community to be examined and the impact of transportation, industrialization and environmental changes, to be documented. Applying this data will assist in short and long-term planning efforts as well as forecast the effects of future development, travel and population growth.

With more than 137,000 residents, the City of Elizabeth is the fourth largest municipality in New Jersey, the Union County Seat, as well as a transportation and economic hub. Accessible by road, air and rail, the city is home to Terminal A of Newark Liberty International Airport, the Port Elizabeth-Newark International Container Seaport, two train stations, two exits on the New Jersey Turnpike as well as has direct access to major highways such as Routes 1&9.

In addition to raising community-wide and regional awareness, this initiative will also create opportunities to broaden horizons, expand knowledge and enable valuable experience to be gained by young people within our municipality. Through your partnerships with Rutgers University, Groundwork Elizabeth and the Mayor's Youth Council, the incorporation of proposed educational components, including skill development, honing of abilities and exposure to environmental careers, will strengthen academic foundations as well as promote personal and professional growth for our future leaders.

Measuring our air quality and identifying sources of air pollution, will provide vital information that will enable actions to be taken and resources to be accessed, in order to increase environmental health and wellness. Therefore, the City of Elizabeth supports this application without hesitation. If I may be of further assistance, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Christian Bollwage", is written over a horizontal line. The signature is fluid and cursive.

J. Christian Bollwage
Mayor



Gregory Waga
Chairman

William O'Dea
Executive Director

Ms Catherine Hart, Deputy Executive Director

Housing Authority of the City of Elizabeth

688 Maple Avenue Elizabeth, NJ 07202

March 21, 2022

Dear Ms Hart:

The Elizabeth Development Company (EDC) supports your application to the Environmental Protection Agency's Environmental Justice Small Grants Program for a grant to investigate the air quality in Elizabeth. The EDC serves as the City's economic arm to help promote its revitalization through a number of tools which focus on the City's historically underserved neighborhoods.

As one of New Jersey's oldest industrial cities, located along the Arthur Kill Elizabeth's neighborhoods have long been impacted by various types of industrial pollution. Our location, adjacent to Newark Liberty Airport and the convergence of the region's excellent highway network, has impacted the air quality of our residents, most of whom are lower income minorities. Although our access to these important transportation modes has resulted in much needed economic growth it is important that this growth has a positive impact on neighborhood residents.

One of these programs, the Neighborhood Revitalization Tax Credit Program (NRTC) provides a state tax credit to corporations that make investments in targeted neighborhoods. The EDC administers the program in the City's Elizabethport and Midtown neighborhoods. These NRTC resources can be used to make improvements that improve the quality of life in these impacted neighborhoods. As your efforts move forward, we will work with you to identify activities that can be funded with our NRTC funding. Since we share office space with Grounwork Elizabeth in one of your buildings in Elizabethport, this coordination will not be difficult.

I am also excited about your commitment to involve the City's youth in your efforts to monitor air quality at your housing sites and your efforts to educate these students on the potential of future careers in the environmental field. Our expertise with successful employment training programs can be used to design specific curriculum for this training and job placement.

I am optimistic that together we will be able to improve the quality of life of the residents of our neighborhoods.

Sincerely,


William O'Dea

205 First Street, Suite 114, PO Box 512
Elizabeth, NJ 07206
Tel: 908.289.0262 | Fax: 908.558.1142
elizdevco@edcnj.org | www.edcnj.org

ED_013931A_00001730-00002

Attn: Catherine Hart
Deputy Director, Housing Authority City of Elizabeth (HACE)

March 20, 2022

RE: Rutgers support for a HACE application for a United States Environmental
Protection Agency Grant for Enhanced Air Quality Monitoring for Communities: EPA-
OAR-OAQPS-22-01

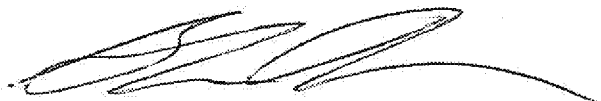
Dear Catherine,

Please accept the support of the NAACP Elizabeth Chapter of your grant application to the EPA. It has been our pleasure to work with the Housing Authority for the last 20 years. We applaud your commitment to your residents' health and wellbeing and agree that ambient air quality monitoring will provide critical data to make systems change.

The NAACP will work with HACE and GWE to engage, educate and empower HACE residents to learn about their air quality, support air monitoring and organize to utilize that data to affect change in the community.

As an overburdened, environmental justice community, Elizabeth has long lived with the effects of air pollution as we are surrounded by the ports and intersected by the Turnpike and Route 1 and 9. It is not acceptable, and we look forward to working together and reducing the environmental burden on our community.

Sincerely,

A handwritten signature in black ink, appearing to read 'Shawn McClain', with a long horizontal flourish extending to the right.

Shawn McClain
President
NAACP, Elizabeth Chapter

Attn: Catherine Hart, Deputy Director, Housing Authority City of Elizabeth (HACE)

March 17, 2022

RE: Rutgers support for a HACE application for a United States Environmental Protection Agency Grant for Enhanced Air Quality Monitoring for Communities: EPA-OAR-OAQPS-22-01

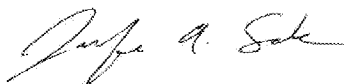
Dear Catherine,

Please accept our support for HACE's application for the EPA Ambient Air Monitoring Quality grant. The mission of the Rutgers Center for Green Building (RCGB) is to promote green building and healthy communities through research, education and training, and partnerships with industry, government and not-for-profit organizations. For the past five years, RCGB has partnered with HACE to implement a series of air quality and health and safety interventions at HACE properties and with HACE residents. Associated methods and outcomes of this community-based participatory (grant-funded) research are leveraged in the current proposal.

As a grant participant, Rutgers will:

- Develop QA/QC protocols in relation to technical data and, depending on final research design, human subjects
- Support installation, monitoring and retrieval of sensor data
- Assist in developing a data interface with HACE's Community Knowledge Boards. (Information also will be communicated via email, community engagement meetings, and public service advertisements.)
- Analyze and present the data to relevant stakeholders with the ultimate goal to present in suitable scientific conference(s) and publish a peer-reviewed paper(s)
- Support project partners in pursuing infrastructure improvements and broader policy change to improve air quality and/or ability to measure it
- Develop an operations and best practices manual to support the continued function of the air quality monitoring network

Sincerely,



Jennifer Senick, PhD
Executive Director, Rutgers Center for Green Building



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Cover Page

Project Title: Addressing Ambient Air Pollution at the Housing Authority City of Elizabeth. An Urban Housing Authority Demonstration Project.

Applicant Information: Housing Authority City of Elizabeth, 688 Maple Ave, Elizabeth NJ 07202. Primary Contact: Catherine Hart, Deputy Director, HACE, (908) 965-2400, chart@hacenj.com, Duns/SAM 44505447240000

Set aside: No

Brief Description of Applicant Organization: The Housing Authority of the City of Elizabeth (HACE) administers thirteen (13) public housing complexes located throughout the city, with a total of 1,604 rental units for low-income and moderate-income households. Five (5) of the projects are devoted to senior citizen housing. HACE is committed to providing safe, decent and sanitary housing conditions for very low-income families, and promotes personal, economic, and social upward mobility to provide families the opportunity to make the transition from subsidized housing to non-subsidized housing.

Project Partners: Rutgers Center for Green Building (Rutgers University), Groundwork Elizabeth, NAACP, Urban League, City of Elizabeth

Project Location: Elizabeth, NJ Census blocks: 304 (seven locations), 319.04 (two locations), 311, 306, 398.01. The thirteen (13) HACE properties are located within the designated Census Blocks; seven (7) of these are public housing complexes and six (6) HACE Affordable Housing Properties

Air Pollution Scope: Installation and operation of 13 stations to monitor sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), and particulate matter (PM) (ultrafine particles, PM₁, PM_{2.5}).

Budget Summary: \$500,000

Project Period: November 2022 - November 2025

Short Project Description:

The Housing Authority of the City of Elizabeth (HACE) in partnership with residents, local environmental non-profit Groundwork Elizabeth, and academic partner Rutgers University, will engage HACE residents to increase community knowledge of air pollution and provide actionable data. The project produces air quality readings from 13 locations utilizing a network of air quality sensors. The data will be uploaded, processed and released to the 1,604 residences at and around which sensors are placed via Community Knowledge Boards at each location. HACE will employ residents as Air Stewards to monitor sensors and engage the Mayor's Youth Council (ages 14-18) and the HACE HEAT (HACE Environmental Adventures Team, ages 14-18) will mobilize community residents. The HACE community will present analyzed data to the City of Elizabeth that will enable actions to be taken and resources to be accessed, resulting in an increase in environmental health and wellness in the City. At project's end, HACE will assume costs necessary to perpetuate the project in their operating budget, including the newly created position of Environmental Justice, Project Coordinator at HACE. The City of Elizabeth supports this application without hesitation. This partnership is also supported by the Elizabeth Development Company, the Elizabeth Urban League and the Elizabeth NAACP.

Workplan: See Workplan and Milestones Schedule page 10.



SECTION 1 Project Summary and Approach

Overall Project

Particulate matter (PM) is a major health problem with greater severity in low-income, racially and ethnically diverse communities, especially in and around the City of Elizabeth, New Jersey. The City of Elizabeth is home to two of the United States busiest ports (Newark Airport Terminal A and Port Elizabeth-Newark International Container Seaport), two train stations, two exits of the New Jersey Turnpike, as well as access to major highways including Route 1 and 9. The EPA Greenbook cites New Jersey, Union County, New York - N, New Jersey Long Island, NY-NJ-CT for Ozone 8-Hour Ozone (2015), 8-Hour Ozone(2008) and Carbon Monoxide (1971).

Addressing Ambient Air Quality

"Addressing Ambient Air Pollution at the Housing Authority City of Elizabeth. An Urban Housing Authority Demonstration Project" seeks to monitor air pollutants of greatest concern in our community: sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), and particle pollution (ultrafine, PM₁, PM_{2.5}). This project draws from and contributes to a growing literature and action base on community-empowered air quality monitoring systems and citizen science air quality research that leverage a revolution in lower cost air quality monitoring tools (; Ilie et al, 2020; Hsu et al, 2017; den Broeder et al, 2016).

The Housing Authority of the City of Elizabeth (HACE) in partnership with residents, local environmental non-profit Groundwork Elizabeth, and academic partner Rutgers University, (the Partnership) will engage HACE residents to increase community knowledge of air pollution and produce actionable data with an Ambient Air Quality Monitoring Network with an end goal to advocate for policy change to reduce pollution encountered by residents of the Housing Authority. The Partnership will conduct ambient air monitoring at thirteen HACE properties using 13 AQLite Standard Ten/10 (or similar) air quality sensors that will collect data on sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), and particle pollution (ultrafine, PM₁, PM_{2.5}). The AQLites will be sending data to a portal using a Wi-Fi connection at a user-specified interval. Unlimited access to the portal is included in the price of the AQLite. HACE will then have the ability to login to a profile that has data from all of their AQLites. This data can be viewed directly on the portal via graphs or can be downloaded as a csv. file for analysis in Excel at the discretion of the user. Once imported, it will be released to the 1,604 residences at and around which sensors will be placed via being monitored on Community Knowledge Boards (at each location). Buildings selected to participate in this study represent different designs, energy efficiency and populations, and please note: five of the selected locations are senior property locations. All sensors will be installed according to manufacturer's instructions. QA protocol will include an initial lab-based assessment at Rutgers. If statistically significant discrepancies between standard concentrations and instrument responses are found, calibration factors will be developed and applied prior to before field deployment. The reference instruments will be in-calibration. The field data will be captured by a suite of sensors and the data will be transferred to a cloud-based database. Rutgers will perform a periodic data check of the data transfer quality by manually downloading data from a randomly selected set of sensors (about 10% of each type) and performing data veracity check with automatically downloaded data. An agreement within 5% will be deemed acceptable.

Community Engagement

HACE in partnership will engage HACE residents to further inform research design/project parameters, increase community knowledge of air pollution and provide actionable data. We will be guided by key tenets of Community-based Participatory Research (Israel et al., 1998; Wallerstein and Duran, 2010).

Groundwork Elizabeth will organize sixteen (16) community meetings at monitored HACE sites, all meetings will be led by the Building Air Stewards. HACE will employ residents as Air Stewards to monitor the sensor network, comprising 13 sensors. The Youth (Mayor's Youth Council and the HACE H.E.A.T.) will support community building meetings by



distributing flyers, organizing transportation, staffing meetings, presenting data to residents, administering surveys and writing the minutes for each meeting. Youth will play an active role. HACE, Rutgers and Groundwork and Youth will coordinate and then monitor the installation of the sensor network. A HACE Environmental Justice Coordinator position will be created to assume management of the project. This position will conduct HACE community meetings, coordinate environmental justice opportunities and advocate for policy change to reduce pollution encountered by residents of the Housing Authority. The partnership will coordinate with Youth (Mayor's Youth Council and the HACE H.E.A.T.) to monitor the installation of the sensor network. In addition to the community meetings the partnership will leverage existing networks to connect residents with low-cost no-cost educational opportunities with EPA, NJDEP, NOAA, NASA Develop, etc. Planned community engagement seeks to engage, educate and empower residents and HACE to advocate for policy change to reduce pollution encountered by residents of the Housing Authority.

Academic Partner: Data, Technology and Information Sharing

Rutgers will support installation, monitoring and retrieval of the monitor data. Upon receipt Rutgers will analyze data and convert into a format that will interface with HACE's Community Knowledge Boards. Information will also be communicated via email, community engagement meetings, and public service advertisements. When technically feasible, data will be collected on a real-time 1-2 week basis through remote access via the manufacturer's website and interface. When that is not possible due to instrument design and communications issues, the data will be manually downloaded from the instruments on a 1-2 week basis to provide historical data for information and analysis. Rutgers will analyze and present the data to relevant stakeholders with the ultimate goal to present in suitable scientific conferences and publish a peer-reviewed paper(s), collect findings and prepare a final paper for publication in suitable academic journals. Rutgers, and the Partnership, will present to the City for consideration for future planning, as will present the final paper to HUD NJ, North Atlantic and DC.

HACE will assume annual expenses of air quality monitoring and related activities in the Housing Authorities annual budget (unde Operating Budget) to support implementation of air quality goals or standards; including the newly created position of Environmental Justice, Project Coordinator at HACE.

Project Significance

The City of Elizabeth: Elizabeth, New Jersey is 16 miles south of New York City adjacent to Newark Airport. With a population of 137,000+, Elizabeth is the fourth largest city in New Jersey, highly urbanized (10,000+ per mile) reflecting its location in the industrialized northern New Jersey. Elizabeth continues to evolve from its industrial past which once included the Singer Sewing factory, many refineries and multiple shipyards. Some refineries remain, and the Port of New Jersey is nearby, but employment now centers on the health, education and service industries. Great efforts are being made to revitalize Elizabeth's downtown core through the clean-up and renewal of the Elizabeth River, improvements to streetscapes, and plans for a multi-modal development along the New Jersey Transit line. The mix of people who live there has changed in the last 100 years. Historically Portuguese, Italian, Polish, English, and German, Elizabeth is now a predominantly Latino (65%) and African American (18%) community. The 2020 U.S. census counted 137,298 people. The population density was 10,144.1 per square mile (3,916.7/km²). The city's Hispanic population was the tenth-highest percentage among municipalities in New Jersey. The median family income was \$47,407 (with a margin of error of +/- \$1,488), well below the national average. About 14.7% of families and 16.7% of the population were below the poverty line, including 23.5% of those under age 18 and 18.5% of those age 65 or over.¹

The post-industrial make-up of Elizabeth is energizing the city, but has led to some challenges as well. Median household income is around \$47,000, two-thirds of the statewide number of \$72,000. Income in some census tracts is barely above \$20,000, and nine out of ten children in the public-school system are eligible for the federal free or reduced lunch program. Beyond immediate issues, indicators of generational poverty can be seen, with only 66% of the students graduating high school, compared to 88% statewide. Unemployment is over 10% in much of the city and higher among



minority youth. This reporting does not fully reflect people living in undocumented households, a factor that would makes things worse in terms of SES statistics.

Elizabeth has been identified, according to the 2020 Environmental Justice Law signed by Governor Murphy as an overburdened communities (OBC), which are defined as a communities with at least 35% of households qualifying as low income, at least 40% of residents qualifying as minority and 40% of residents with limited English proficiency. This project will engage a public housing authority, many properties located in “redlined” areas, and in ambient air quality nonattainment areas in partnership with a local nonprofit and academic institution. Local chapters of the Urban League, NAACP and the Elizabeth Development Authority (EDC) support this project. Mayor Chris Bollwage “doesn't hesitate to support this project.” (Letter of Support, City of the Elizabeth). This project generates actionable data for an overburdened community (OBC as defined by the NJDEP) and includes a plan for ambient air monitoring sustainability.

To support this application GWE, under the auspices of the Climate Safe Task Force, conducted the following research using two mapping tools. See “Other Attachment” for query screen shots.

Climate Safe Neighborhood Mapping Tool: Elizabeth, NJ compared to Union County, NJ.

1. Rate of Impervious Coverage greater than 65%
2. Coverage of Tree Canopy is less than 10%
3. Asthma Rates of Prevalence ranges from less than 8% to over 10%

EJScreen Tool: Query Findings for Elizabeth, NJ 07206 and Surrounding Neighborhoods.

1. Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$). Higher: National 63%, State 85% -99%
2. EJ Index - NATA Respiratory Hazard Index. Higher: National 77% - 99%, State 77% - 99%
3. NATA Diesel PM ($\mu\text{g}/\text{m}^3$). Higher: National 93% - 96%, State Percentiles 86% - 96%

SECTION 2 Community Involvement

Community Partnerships

All activities in this project fall within the parameters of the Clean Air Act, Section 103(b)(3) and include research, public education, monitoring, and development related to the causes, effects (including health and welfare effects), extent, prevention, and control of air pollution. HACE will comply with all requirements in 2 CFR Part 200 and/or EPA Guidance on Participant Support Costs in making payments to partners receiving funding from this grant. HACE’s financial staff are experienced with managing grant funding.

Partners & Participants

HACE HEAT (HACE Environmental Adventure Team) Youth development and employment program exploring the intersection of the environment, equity and civil service. Programming focuses on Education: 6 community leaders presentation and group activity (1 cooking) Service: 2 HACE days supporting cooking program, 4 offsite experiences Adventure: Hike, kayak, stream restoration, zoo/aquarium, beach, oyster seeding, wildlife exploration

Groundwork Elizabeth Climate Safe Task Force and the Climate Safe Neighborhoods Partnership: Groundwork Elizabeth (GWE) is an integral partner in a number of community driven efforts to maintain and revitalize underserved neighborhoods in Elizabeth. Most recently, GWE received an EPA Environmental Justice Small Grant to monitor and address the negative impacts of air pollution in the City’s neighborhoods. That work informs this application. In 2019 GWE joined the Climate Safe Neighborhoods partnership to explore the relationship between historical race-based housing segregation and the current and predicted impacts of climate change. As a result, GWE launched the Climate Safe Elizabeth Task Force to engage, educate and empower select Elizabeth communities. **See letter of commitment attached.**



City of Elizabeth Mayor's Youth Council is staffed by young people from ages 14-24 and led by peers. By including youth in conversations with community leaders, these youth seek to deliver their voice as an instrument for policies that will address environmental injustice, issues surrounding diversity and equity. The team meets with Mayor J. Christian Bollwage, members of the City Council and policy makers. **See letter of commitment attached.**

Rutgers Center for Green Building's mission is to promote green building and healthy communities through research, education and training, and partnerships with industry, government and not-for-profit agencies organizations. Housed at the Edward J. Bloustein School of Planning and Public Policy, the Rutgers Center for Green Building, forms a common umbrella for existing and proposed initiatives being carried out through separate Centers at the Bloustein School, the School of Environmental and Biological Sciences (formerly Cook College), the School of Engineering and other Rutgers units that are integral to developing and implementing innovative green building strategies. The Center conducts applied research utilizing planned and existing green building projects, works with industry and government to promote these concepts, and develops undergraduate, graduate and professional education programs. The Rutgers Center for Green Building has established itself as a pre-eminent interdisciplinary center for green building excellence in the Northeast, while serving as a single accessible locus for fostering collaboration among green building practitioners and policymakers in New Jersey. Beyond the principal staff identified below, RCGB will employ additional experts in communication, interface design, electrical engineering/network design and other as dictated by project needs. RCGB and HACE have partnered for 5+ years, with funding from US HUD, NSF, CDC and local charitable funder Valley National Bank, to conduct indoor and ambient air quality research. **See letter of commitment attached.**

NAACP, Elizabeth Branch: The mission of the National Association for the Advancement of Colored People is to ensure the political, educational, social, and economic equality of rights of all persons and to eliminate race-based discrimination. **See letter of commitment attached.**

Elizabeth Development Company (EDC) administers the NRTC program. The Neighborhood Revitalization Tax Credit Program (NRTC) is designed to foster the revitalization of New Jersey's distressed neighborhoods. The program supports activities to improve the environmental condition of the neighborhoods they promote. **See letter of commitment attached.**

Community Engagement

HACE in partnership with residents, local environmental non-profit Groundwork Elizabeth, and academic partner Rutgers University, will engage HACE residents to increase community knowledge of air pollution and provide actionable data. Groundwork Elizabeth will organize sixteen (16) community meetings at monitored HACE sites, all meetings will be led by the Building Air Stewards. HACE will employ residents as Air Stewards to monitor the sensor network, comprising 13 sensors. The Youth (Mayor's Youth Council and the HACE H.E.A.T.) will support community building meetings by distributing flyers, organizing transportation, staffing meetings, presenting data to residents, administering surveys and writing the minutes for each meeting. Youth will play an active role. HACE, Rutgers and Groundwork and Youth will coordinate and then monitor the installation of the sensor network. A HACE Environmental Justice Coordinator position will be created to assume management of the project. This position will conduct HACE community meetings, coordinate environmental justice opportunities and advocate for policy change to reduce pollution encountered by residents of the Housing Authority. The partnership will coordinate with Youth (Mayor's Youth Council and the HACE H.E.A.T.) to monitor the installation of the sensor network. In addition to the community meetings the partnership will leverage existing networks to connect residents with low-cost no-cost educational opportunities with EPA, NJDEP, NOAA, NASA Develop, etc. Planned community engagement seeks to engage, educate and empower residents and HACE to advocate for policy change to reduce pollution encountered by residents of the Housing Authority.

Community Based Set Aside - No



SECTION 3 Environmental Justice and Underserved Communities

Particulate matter (PM) is a major health problem with greater severity in low-income, racially and ethnically diverse communities, especially in and around the City of Elizabeth, New Jersey. The City of Elizabeth is home to two of the United States busiest ports (Newark Airport Terminal A and Port Elizabeth-Newark International Container Seaport), two train stations, two exits of the New Jersey Turnpike, as well as access to major highways including Route 1 and 9. The EPA Greenbook currently cites New Jersey, Union County, New York - N, New Jersey Long Island, NY-NJ-CT for Ozone 8-Hour Ozone (2015), 8-Hour Ozone (2008) and Carbon Monoxide (1971). Cities Solutions on Harvard.edu states "9000 housing authority properties exist within 1 mile of a superfund site (Adler, Laura. "Monitoring Air Quality and the Impacts of Pollution." *Data-Smart City Solutions* (<https://datasmart.ash.harvard.edu/news/article/monitoring-air-quality-Andthe-impacts-of-pollution-679>). Accessed 22 March 2022.)

This project will engage a public housing authority, many located in "redlined" areas, in ambient air quality in partnership with a local nonprofit and academic institution. Local chapters of the Urban League, NAACP and the Elizabeth Development Authority (EDC) support this project. Mayor Chris Bollwage "doesn't hesitate to support this project," (Letter of Support, City of Elizabeth). This project generates actionable data for an overburdened community (OBC as defined by the NJDEP) and includes a plan for ambient air monitoring sustainability.

SECTION 4 Environmental Results: Outcomes, Outputs and Performance Measures

HACE refers to the Outcomes and Outputs as outlined in Opportunity EPA-OAR-OAQPS-22-01.

Expected Project Outputs

Community specific assessments of air pollution data sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), and particle pollution (ultrafine, PM₁, PM_{2.5}). Deployment of equipment (AQLite Standard Ten/10 or similar) air quality sensors to conduct air quality monitoring in or near an underserved, overburdened community. Promotion of partnerships and community involvement through various activities and information exchanges, planned are 16 community meetings, 18-month transfer of air quality data to 1604 residences via Community Knowledge Board (and/or alternative communication methods), 18-month public awareness banner campaign at five locations, data sharing and advocacy support.

Expected Project Outcomes

Short Term Outcomes

- Problem identification via monitoring of air pollution data sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), and particle pollution (ultrafine, PM₁, PM_{2.5}).
- Increased community awareness of air pollutants and possible effects on human health and the environment.
- Increased community access to information and technical tools that increase the community's understanding and reduce the environmental and human health risks.

Intermediate Outcomes

- State or local policy actions. The community will be prepared with data to present to the City of Elizabeth.
- Planning for the identification of pollutant source will result in the development of mitigation actions from parties responsible for certain air pollutants
- Explore possible community actions to mitigate air pollutants identified by air quality monitoring networks.

Long Term Outcomes:

- Community-led system change will result in the reduction of certain air pollutant emissions
- Reduction of ambient concentrations of certain air pollutants(s) will occur once identified. Community plans will target identified pollutants



- Reduction of human exposure to certain air pollutant(s) due to knowledge increase

Performance Measures and Plan

HACE refers to the Performance Measures as outlined in Opportunity EPA-OAR-OAQPS-22-01.

Timeline and Milestones

HACE Workplan/Milestone Schedule for Funding Opportunity Number: PA-OAR-OAQPS-22-01

	Y 1													Y 2				Y 3				Y4			
Activity	M O 0	M O 1	M O 2	M O 3	M O 4	M O 5	M O 6	M O 7	M O 8	M O 9	M O 10	M O 11	M O 12	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	(Post Project HACE Activities)			
Milestone 1: Administration																									
Notification of Award	x																								
EPA/HACE Contract Signed	x	x																							
Contracts with Subrecipients			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
Invoicing			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
Reporting and Updates		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Milestone 2: Increase Air Monitoring																									
Purchase monitors		x	x	x	x	x	x																		
Develop calibration control and apply prior to sensors before field deployment				x	x	x																			
HACE install Sensors						x	x	x	x																
GW coordinate sensor installation w Partnership and residents Air Steward						x	x	x	x																
Sensor Maintenance							x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Air Stewards (Community Residents) Monitor Sensor Network							x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Data can be viewed directly										x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Information transfer											x	x	x	x	x	x	x	x	x	x	x	x	x		
Milestone 3: Engage Community Stakeholders																									

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SECTION 5 Quality Assurance Plan

SECTION 6 Past Performance and Programmatic Capability

- Project outcomes have included key learnings and adaptive practices implemented for seniors in conditions of heat waves (NSF Grant AGS-1645786), Indoor Air Quality best practice guides for property owners and tenants (HUD Healthy Homes Program Grant NJLHH-0202-09; HUD Healthy Homes Technical Studies Grant # NJHHU0019-13; NSF Grant AGS-1645786; American Planning Association's Plan4Health Initiative, supported through the CDC, Division of Community Health #DP14-1418; grants from Valley National Bank) and multiple years program development and implementation of youth summer camp STEM modules on AQ-IAQ-health, including deployment of the EPA AirNow Flag Program at 5 HACE buildings including with support from seniors hired as "Air Quality Ambassadors" (funders, op cit). To the best of our knowledge, this is a unique deployment of the flag program in a public housing setting. A HACE resident joined the Rutgers team in presenting results at a peer-reviewed conference.
- Members of the Elizabeth community have previously partnered with scientists at the RU CEED to address community concerns regarding the prevalence of asthma and air pollution from diesel trucks in Elizabeth's neighborhoods adjoining Port Newark-Elizabeth Marine Terminal, as a result local policy changed to reroute diesel trucks off of identified Elizabeth roadways.
- HACE was awarded a \$2.3 million grant from the U.S. Department of Housing and Urban Development (HUD).
- HACE has entered into agreement with: NAACP and The Urban League of Union County
- Groundwork Elizabeth (GWE) has entered into agreement with the EPA in regards to EPA-OP-OEJ-21-01.



- GWE's Climate Safe Neighborhoods Partnership educated, engaged and empowered Elizabeth stakeholders to participate in the Combined Sewer Overflows Long Term Control Plan. Participation resulted in increased green infrastructure options Elizabeth and five green infrastructure demonstration projects at the Groundwork Elizabeth MicroFarm in partnership with Sustainable Jersey.
- Groundwork Elizabeth has entered into agreement with the National Park Service and US Fish and Wildlife

Programmatic Capability & Staff Expertise

Catherine Hart: The Elizabeth Housing Authority's team has the managerial, technical, and administrative capability necessary to implement evidence-based strategies that are designed to improve the quality of life for the residents it serves. The housing authority is managed by an experienced managerial team including Executive Director, William D. Jones who oversees and manages an operating budget of \$25 million annually and a full-time staff of 53. The Executive Director is assisted by a very passionate and focused Deputy Executive Director, Catherine Hart who manages the entire housing portfolio of just over 1600 units of public housing and affordable housing; and 1500 Section 8 Rental Assistance Vouchers. In addition, Jobs Plus programming and Community Supportive services for seniors and families have been implemented to provide continuing opportunities for residents.

Jennifer Senick, PhD. Dr. Senick is Executive Director of the Rutgers Center for Green Building and a Facilitator of the NJ Planning Healthy Communities Initiative, a coalition of academic and community resources dedicated to improving the built environment's impact on health. She has more than 15 years of advanced research experience on topics related to the intersection of behavior, energy and air quality, and evaluation research and over 25 years' experience in urban planning and public policy. Senick has managed large multi-disciplinary teams that have developed and deployed statistically significant behavioral interventions for IAQ in low-income households, including at HACE and is an active member of the building codes development community with emphasis on proposing building code revisions to existing buildings, including consideration of IEQ. She has led or contributed to dozens of studies and publications on applied healthy housing topics including those focused on air quality and community-based interventions and is active in the development and conduct of K-12 STEM/maker initiatives in disadvantaged communities.

Clint Andrews, PhD. Dr. Andrews is Director of the Rutgers Center for Green Building and co-Director of the Center for Urban Policy Research, Professor, and Associate Dean for Planning at Rutgers University's E. J. Bloustein School of Planning and Public Policy. He is a member of the Environmental and Occupational Health Sciences Institute and serves on the Science Advisory Board for the New Jersey Department of Environmental Protection. He is a licensed professional engineer and a member of the American Institute of (continued...)

Certified Planners. He brings considerable experience and background in mechanical engineering and technology assessment to his work, particularly in issues of energy, climate research and green technology.

Gediminas "Gedi" Mainelis is a Professor of environmental sciences at Rutgers University. He is an international expert in physical and biological aerosols and in assessing exposure to indoor and outdoor air pollutants. Dr. Mainelis also published on the performance and application of cost-effective air pollution sensors. In addition, he brings his knowledge of pollutant environmental fate, exposure and health effects to the team. Over the past years, his research expanded to investigate and apply Dr. Mainelis also published on the performance and application of low-cost cost-effective air pollution sensors and exposures to manufactured nanoparticles and explored indoor air issues. Several of his current projects focus on COVID-19 issues. His research efforts have resulted in more than 110 peer-reviewed publications, book chapters, and several patents on advanced air sampling and control technologies. In addition, multiple papers from his group have been included in most downloaded article lists of various peer-reviewed journals. Dr. Mainelis has served as Chair of the Bioaerosols and Health-Related Aerosols working groups of the American Association for Aerosol Research (AAAR). Prof. Mainelis is a recipient of the Research Excellence Award from Rutgers University and the Lyman A. Ripperton Environmental Educator Award presented by the Air and Waste Management Association of the US.

Jonathan Phillips, Executive Director, Groundwork Elizabeth. Serving as Executive Director for Groundwork Elizabeth since 2003, Mr. Phillips has developed and managed the nonprofit in the following program areas: Healthy Living/Urban Agriculture, Youth Initiatives, Parks and Urban Waters, Green Infrastructure and Green Careers, and the Climate Safe



Initiative. He has fostered relationships with the public, private, and community sectors in Elizabeth, Union County, and beyond

Jackie Park Albaum, Director of Urban Agriculture and Environmental Justice, Groundwork Elizabeth. (Project Mgr.) Since 2009, Jackie has served in progressive roles focused on urban agriculture and more recently environmental justice. She led the More P.E.A.S. grant funded project with the NJDEP and worked with Union County to develop the Union County Means Green and Kids Dig In grant programs. Jackie currently serves as the Chair of the Land Committee on New Jersey's Department of Environmental Protection Environmental Justice Advisory Council (EJAC) and is a member of the Urban Ag NJ Committee of NRCS.

John Evangelista, Director of Operations. John joined the Groundwork Elizabeth Team as part of the More P.E.A.S. initiative funded in part by the NJDEP. In his role as Director of Operations, John manages all aspects of the Come Grow With Us! Urban Agriculture Initiatives, youth development projects and hydroponics as well as all the design/build projects for Groundwork Elizabeth. As part of Groundwork Elizabeth, John built the first hydroponic greenhouse in the city of Elizabeth. In 2018, John became co-director of The Climate Safe Neighborhoods partnership which brings together nine Groundwork Trusts to explore the relationship between historical race-based housing segregation and the current and predicted impacts of climate change addressing air, water and land issues.. John is currently 1st Vice President of the Union County Master Gardener program Rutgers Cooperative Extension and holds a seat on The Bloomfield Environmental Commission.

SECTION 7 Budget

HACE Proposed Budget for Funding Opportunity Number: PA-OAR-OAQPS-22-01			
Line item	Description	Total	Cost Basis
Personnel	HACE Deputy Director: 3.5% FTE. Director of Finance and Administration: 3.5% FTE, Director of Staff Operations 3.5% FTE at \$150,000 (\$13,500 per year x 3 years.)	\$40,500	Rates are based on current salaries for full-time employees to conduct, track, report and track finances for project.
Personnel	Environmental Justice Coordinator Monthly Stipend \$1,000 per month x 36 months	\$36,000	Rates are based on Consultant rate of \$50 per hour.
Personnel	HACE Electrician	\$15,000	30 hours per monitor at \$30 per hour, fringe included.
Personnel	HACE Maintenance	\$6,800	26 hours per monitor at \$20 per hour, fringe included
Fringe	HACE Fringe	\$2,700	Based on current HACE fringe rates
Equipment	AQLite Standard Ten/10	\$136,000	\$8500 per monitor, 15 monitors for locations and backup

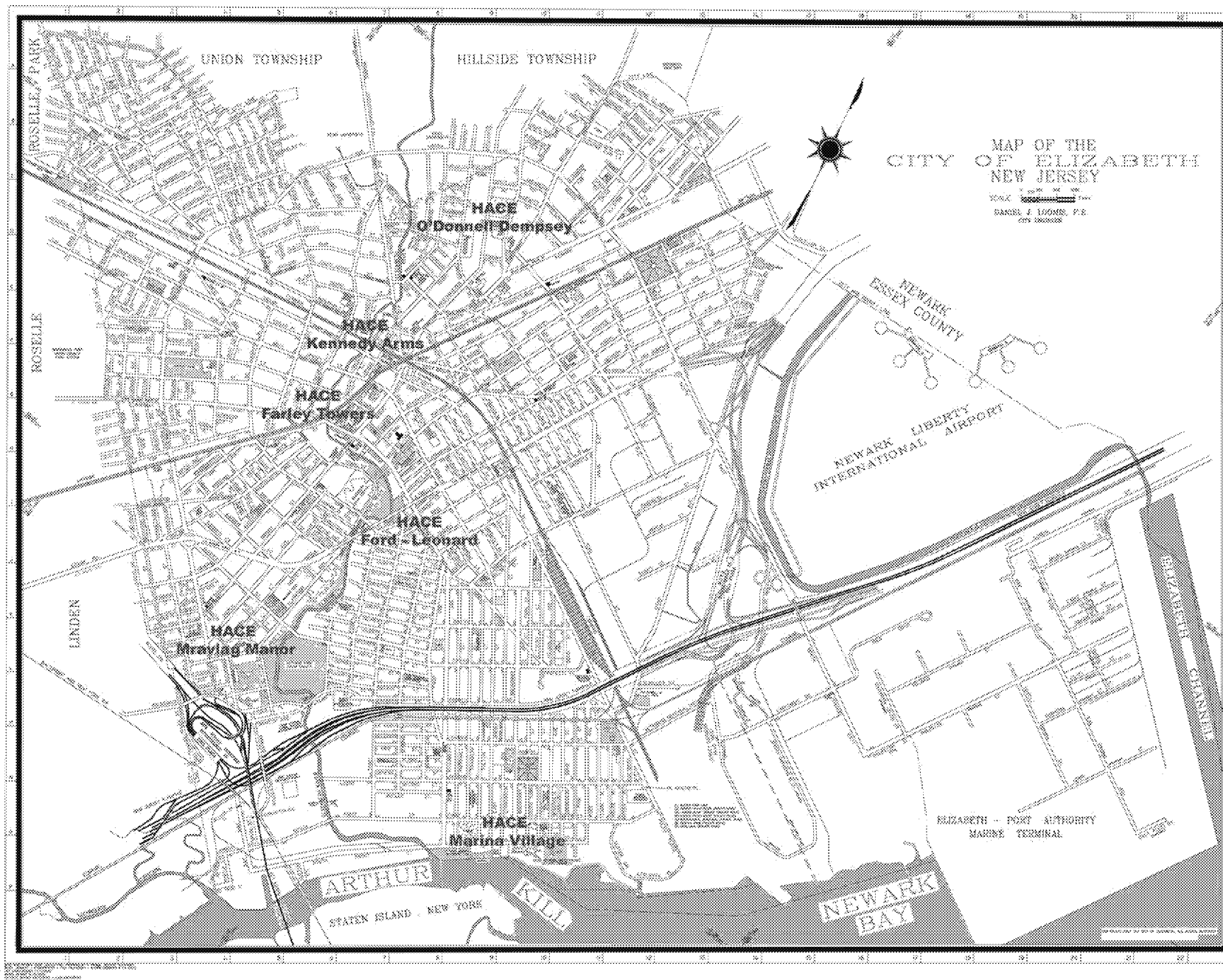


Supplies	Office Supplies (\$2,500), Public Awareness Campaign (\$5,000), Meeting Materials (\$2,500)	\$9,468	Office supplies to support operations for 36 months. The Public Awareness Campaign will incorporate advertising, digital communications, and printed materials.
Contractual	Rutgers University (\$161,532)	\$161,532	Salaries and Wages \$77,500. Fringe \$10,633. Graduate Assistant Partial Tuition/Fees \$15,750. Domestic Travel \$2,950. Project Supplies \$1,500. Total Direct \$108,333. F&A \$53,199. Total PContractual cost.
Contractual	Groundwork Elizabeth (\$92,000)	\$92,000	Groundwork Elizabeth oversees monitor installation and creates an updated GIS layer to detail sensor. GWE, will plan, organize and document 16 community meetings, identify the EJ Coordinator and transition the project to that position. GWE will support all reporting efforts. 5.8% FTE Executive Director, two 10% Directors, GWE will contribute fringe benefits.
Indirect Rate -	Declined	\$0	HACE is a quasi governmental organization and receives operating support from Federal Sources. To claim a rate will create a double billing of Federal Funds
	SUBTOTAL	\$500,000	

Upon completion of the project HACE will assume all expenses of air monitoring systems, and related oversight, data collection, maintenance, etc. at project completion.

ATTACHMENTS

1. Map of 13 Elizabeth Housing Authority locations
2. Dashboard Screen Capture
3. Letters of Support, combined pdf.
4. Resumes



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